VIRGINIA DEPARTMENT OF HEALTH
DIVISION OF EPIDEMIOLOGY
(804) 786-6261

VOLUME 80/NUMBER 10
OCTOBER 1980

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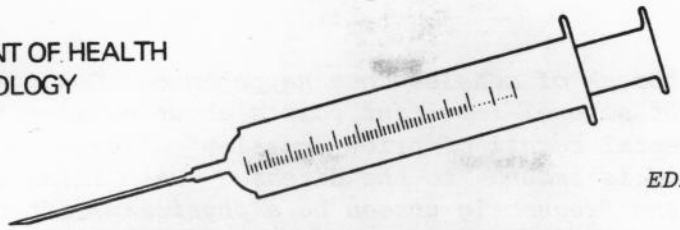

EPIDEMIOLOGY BULLETIN

James B. Kenley, M.D., Commissioner Grayson B. Miller, Jr., M.D., Epidemiologist

MEASLES OUTBREAK IN RAPPAHANNOCK COUNTY

On September 9, 1980, the index case in a measles outbreak returned to the United States from England aboard an airline flight. This 15-year-old white female resident of Warren County and student at a private school in Rappahannock County, had experienced prodromal symptoms prior to the flight and subsequent rash onset late on September 9. Her symptoms included rash of 6 days duration, Koplik spots seen by a physician, fever for 2-3 days (highest 104.6°F), cough, coryza, conjunctivitis and photophobia. She had been in England since August 5, 1980.

Four siblings of the index case, ages 16, 14, 12, and 6 years, had had measles disease in the past according to parental recall. The 4 siblings were sent home from school when they exhibited prodromal symptoms September 17; their rash-onset dates were September 18, 20 (2 cases) and 21. A record review found that 214 students out of the total school population of 305 had inadequate immunization records. A total of 86 students were immunized at a voluntary measles clinic conducted at the school September 26. The third generation in this outbreak included 27 cases with dates of rash onset from September 27-October 1. The fourth generation included 6 cases with rash-onset dates from October 10-14. The one fifth generation case (October 23) was identified in the father of a fourth-generation case. Total cases in the outbreak reached 39, with all cases except the last one occurring in students at the private school.

Of the many reports of suspected measles received from across the state as a result of this outbreak, none could be confirmed serologically as measles except for those cases epidemiologically related to the outbreak.

The students attending the private school resided in eight nearby localities. It was decided that susceptible children in the junior and senior high schools of these localities were at greatest risk if the outbreak were to spread from the private school students; thus, measles immunization clinics were conducted in these high risk schools as well as several other nearby schools. Clinics held and the proportion of enrolled students immunized were as follows:

Clinic Date	County	Jr. & Sr. high Enrollment	# Immunized	% Immunized
10-3-80	Warren	1881	981	52.2
10-7-80	Rappahannock	541	230	42.5
10-9-80	Frederick-Winchester	5447	3406	62.5
10-10-80	Clarke	882	579	65.6
10-10-80	Culpeper*	1064 (high school only)	288	27.1
10-15-80	Prince William	18,500	6006	32.7
10-16-80	Page*	1534	403	26.3
10-16-80 and 10-20-80	Loudoun+	7516	732	10.3
10-30-80	Fauquier	3675	1462	39.8

* Outside zone of highest risk + Health Department night clinics only

Editorial Note: This outbreak of measles in a Rappahannock County private school serves to highlight several important points about measles transmission and control. First, parental recall of prior "measles" disease is of little use in deciding if a child is immune to the disease. Rash illnesses, thought to be measles by a parent (and frequently unseen by a physician) often turn out not to have been measles when a child or young adult who supposedly had the disease is exposed to a confirmed measles case or when such an individual is serologically tested for evidence of immunity.

Secondly, the clinical diagnosis of measles is not as easy nor reliable as it used to be, especially during periods other than the traditional "measles season" of winter and early spring. The Maryland State Health Department has required serological confirmation of each reported case of measles over the last several years. Data collected there during that time show that 60% of the reported cases cannot be confirmed serologically. This fact reinforces the need for obtaining acute and convalescent serum samples on all suspected cases. The State Division of Consolidated Laboratory Services (DCLS) does the serological testing without charge, and information on how to obtain their service is available from your district medical director.

Finally, despite many known susceptibles in surrounding schools and many contacts between known cases and students in those surrounding schools, a full-blown measles outbreak failed to extend beyond the index school. Although the school-based immunization clinics contributed to interrupting transmission, the outbreak terminated before the effect of many of those clinics could have been felt. This suggests that "out-of-season" measles may be less well transmitted in the junior and senior high school susceptible population than was anticipated. Prompt identification of measles in a school, followed by immediate intervention by school and health department officials, could possibly prevent large measles outbreaks in our schools during the winter and early spring. The enactment and enforcement of laws requiring evidence of measles immunization for school attendance during measles outbreaks has greatly decreased the transmission of measles in most other states. The planned implementation of a similar law enacted by the Virginia General Assembly in 1979 will most certainly produce similar results in our state.

SEROLOGICAL TESTS FOR GONORRHEA

The FDA recently approved marketing for three serologic tests for gonococcal antibody. Two of the tests are being distributed already, they are Fisher Diagnostics' Fluorescent Gonorrhea Test-Heated (FGT-H) and Organon Diagnostics' Gonosticon Dri-Dot test. These tests are approved only for screening women who are at low risk for gonorrhea.

A high proportion of individuals from low-risk populations who are test positive will be falsely positive. Therefore the FDA requires that the package inserts for the new serologic tests state that positive tests MUST BE confirmed by culture before making a diagnosis.

The serologic tests are not for use in diagnosis when gonorrhea is suspected for clinical or epidemiologic reasons.

Some problems in interpreting positive results because of false positives include:

1. *antibody persisting from previous gonococcal infection*
2. *antibody from meningococcal disease*
3. *other non-specific reactions*

On the other hand, infected patients may give false negative reactions because the serum was collected after infection and before antibody production. Also, some patients don't produce antibody to the test antigens.

One of the tests has a specificity of 81.6% and a sensitivity of 76.5% for low prevalence female populations. If one assumes the prevalence of gonorrhea in a low prevalence population is 2%, then the positive serologic test has a predictive value of 7.82%. This means that only eight out of every 100 positives would be true positives; the other 92 would be false positives.

To reiterate, the serologic tests for gonorrhea are approved only for screening asymptomatic women in low-prevalence populations. Any positive test has to be confirmed by culture before making a diagnosis of gonorrhea.

TREATMENT OF GONORRHEA

From reports of gonorrhea cases around the state it has been observed in the last few months that physicians in various parts of the state have been using cephalexin (Keflex®) to treat gonorrhea.

It should be noted that cephalexin is not included in the Center for Disease Control Recommended Treatment Schedules for the treatment of gonorrhea and that the package insert does not include Neisseria gonorrhoeae as an approved indication for cephalexin.

In studies done in Great Britain[1] of 20 patients given one dose of 2 grams of cephalexin, there was a 45% failure rate. When the same physicians gave 2 grams followed in one hour by another 2 grams, there was a 30.4% failure rate, and when they gave 3 grams with probenecid there was still a 14.3% failure rate.

In a different study[2], other physicians found a 14.6% failure rate when 2 grams were given, followed by 2 grams in 5 hours.

In a study done in Delaware[3] there was a 30% failure rate after a single dose of 3 grams of cephalexin.

In a Canadian study[4] where 4 grams to 12 grams were given over 24 to 96 hours, they said their failure rate was 26.7%; if one didn't count the ones who did not return, the failure rate was 33.3%.

From these studies it is apparent that failure rates at best were 14% and could be as high as 45% depending on dose used. Obviously these failure rates are unacceptable given that other approved forms of much more efficacious therapy are available.

1. *OLLER, L. Z. et al. Postgraduate Med. J. 46 (Supplement): 99, 1970.*

2. *WILLCOX, R.R., and K.S. WOODCOCK, Postgraduate Med. J. 46 (Supplement): 103, 1970.*

3. *TAYLOR, W.A. and W.J. HOLLOWAY, Del. Med. J. 42:356, 1970.*

4. *ACKMAN, C.F.D. et al. Canad. Med. Assoc. J. 106:350, 1972.*

MONTH: October

DISEASE	STATE					REGIONS				
	THIS MONTH	LAST MONTH	TOTAL TO DATE 1979 80	TOTAL TO DATE 1978 79	MEAN 5 YEAR TO DATE	THIS MONTH N.W.	N.	S.W.	C.	
CHICKENPOX	2	2	376	941	928.0		2			
MEASLES	33	6	338	275	1332.8	30	3			
MUMPS	4	8	68	87	268.4		1			3
PERTUSSIS	-	1	7	12	14.2					
RUBELLA	2	1	53	203	316.6	2				
MENINGITIS – ASEPTIC	24	41	161	226	129.8	9	2	9	3	1
BACTERIAL	10	10	147	139	97.8	4		2	2	2
ENCEPHALITIS – INFECTIOUS	3	10	30	28	23.2				2	1
POST-INFECTIOUS		2	5	15	6.8					
HEPATITIS A (INFECTIOUS)	28	30	263	228	273.6	6	10	8	3	1
B (SERUM)	33	43	438	374	248.6	14	1	6	10	2
SALMONELLOSIS	151	172	1082	978	689.6	15	18	20	41	57
SHIGELLOSIS	21	20	120	229	135.6	1		16	4	
TUBERCULOSIS – PULMONARY	40	62	446	492	560.6					
EXTRA-PULMONARY	5	5	82	94	145.4					
SYPHILIS (PRIMARY & SECONDARY)	69	49	476	399	475.0	1	14	5	14	35
GONORRHEA	2071	2097	19,026	19,179	20,604.8					
ROCKY MOUNTAIN SPOTTED FEVER	5	17	94	90	112.0	1		1	3	
RABIES IN ANIMALS	8	1	21	18	38.8	8				
MENINGOCOCCAL INFECTIONS	1	5	50	76	44.6		1			
INFLUENZA	12	8	782	374	5628.6	4		8		
MALARIA	2	8	58	22	15.4		1			
OTHER: KAWASAKI DISEASE	1	2	12	17	N/A					1
VIRAL HEPATITIS, UNSPECIFIED	12	14	134	180	155.0	2	3	3	2	2
TYPHOID FEVER	1	3	8	4	5.4	1				

COUNTIES REPORTING ANIMAL RABIES: Frederick-1 bat; Page-2skunk; Rockingham-2skunk, 1 cat; Shenandoah-1 raccoon; Warren-1 raccoon

OCCUPATIONAL ILLNESSES: OCTOBER-Occupational pneumoconioses 16, occupational dermatitis 3, occupational hearing loss 5, Asbestosis 4, Farmer's Lung 1

SEPTEMBER-Occupational pneumoconioses 5, Occupational hearing loss 3

Published Monthly by the
VIRGINIA HEALTH DEPARTMENT
Division of Epidemiology
109 Governor Street
Richmond, Virginia
23219

Bulk Rate
U. S. POSTAGE
PAID
Richmond, Va.
Permit No. 1225